

A HIGHLY EFFICIENT, HIGH CURRENT DRIVE, MULTI-PHASE VOLTAGE
MULTIPLIER

ABSTRACT

The highly efficient, high current drive, multi-phase voltage multiplier reduces the inefficiency due to the active level overlapping portion of the clock at high frequencies, reduces the inefficiency due to extremely large drive currents on the inverters supplying current to the multiplying capacitors $C1(*)$ and $C2(*)$, and increases the efficiency of the multiplier by allowing $M-1$ phases to charge the output at any given time and providing more time given to each capacitor to fully charge and discharge. The ripple on the output is much smaller than in a single dual phase multiplier. This multi-phase voltage multiplier supplies very large current to the load while remaining very efficient.